

Office of Technical Assistance Research Proposal
Nonstaining Water-based Coatings for Cedar Siding

BACKGROUND

Cedar is a popular material for manufacturing residential home siding. The siding is produced as boards of various width and thickness. The boards are either rough hewn or planed smooth and given a primer coat at the lumber yard. This coating is usually sprayed on or roller coated with automated equipment. The most accepted coating for cedar is an oil based primer. Water-based primers will extract water soluble tannins from the cedar board which discolors the coating and all subsequent coatings. The problem is not as prominent on rough hewn lumber.

The US Forestry Service has documented that painted residential siding made with factory primed boards weathered substantially better than siding constructed of unprimed boards at the time of installation. Therefore pollution prevention is served when the siding does not need to be painted as often when it is constructed of factory primed boards.

The factory primed cedar siding that is coated with an oil based primer is solvent based. Consequently the manufacturers are classified as major sources of VOC emissions in Massachusetts. Several siding manufacturers in Massachusetts have been cited by the DEP for not having proper Air Quality Permits. These permits are very restrictive in terms of production output. The alternative to production output is to install costly and nonproductive pollution control equipment. Therefore, converting to water-based coatings will allow the coating operations to continue at increased rates without exceeding the restrictions of the permits.

There are four companies in Massachusetts that use oil based primers for cedar siding. The combined emissions of these companies equals 187 tons/year VOCs.

OBJECTIVES

This project would lead to the development of water-based polymer systems (suspensions, emulsions, colloids or solutions) that can not be stained by the water extractable substances in cedar boards when formulated into primers and paints.

This could be achieved by investigating the extraction mechanism for water soluble substances by water-based coatings and classify polymer species by degree of extraction. Another approach would be to research additives that would block the extraction of water solubles from cedar substrates or allow for the extraction but eliminate the stain by changing the color of the extractable. I'm sure there are other clever solutions to this problem.

OTA can assist in the identification of an industry partner.